SENSE OF COMMUNITY, PERCEIVED LEARNING, AND ACHIEVEMENT RELATIONSHIPS IN AN ONLINE GRADUATE COURSE

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ABSTRACT

The ubiquity of online programs in higher education requires continued focus on designing instructional environments that improve students' learning. We examine students' perceptions of sense of community and learning, as well as academic achievement, using grades obtained from a final project and participation in asynchronous discussion forums. Findings indicate a significant correlation between perceived learning and the sense of community connectedness subscale. Although sense of community is closely associated with interactions, the results did not show a significant relationship between the sense of community and the discussions achievement variable. Implications and challenges in implementing activities to foster sense of community in an online learning environment are discussed.

Keywords: Sense of community, perceived learning, achievement, online learning, asynchronous discussions.

INTRODUCTION

In the United States, 7.1 million higher education students took at least one online course during 2012. This represents a 6.1 % growth rate from the previous year (Allen & Seaman, 2014). Furthermore, in 2012, 62.4% of higher education institutions offered online courses and full programs as compared to 34.5% in 2002 (Allen & Seaman, 2013). The growth of online programs in higher education requires continued attention to the design of instructional environments to improve learning. Among different conceptions of learning, constructivist theories emphasize the creation of knowledge by the learners while they attempt to make sense of their experiences through interactions with the community and the environment (Driscoll, 2005; Harasim, 2012). Among the many factors that may impact the success of online environments, the development of online communities has become an important field of interest, especially in higher education (Bond & Lockee, 2014; Shea, 2006; Snyder, 2009).

Based on collaborative constructivism, Garrison's (2011) Community of Inquiry theoretical framework (CoI) identified social presence, cognitive presence, and teaching presence as key elements to inform instructional design and create meaningful e-learning experiences (Richardson, et al., 2012). One important factor positively associated with CoI is sense of community (SOC) (Garrison, 2007). In the community psychology field, SOC was defined as

the feeling of belonging to a group, the sense that group members mattered to each other and would meet each other's needs through their shared commitment to the group (McMillan and Chavis, 1986)."the feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' needs will be met through their commitment to be together" (McMillan and Chavis, 1986, p. 9). Extending the concept to an educational setting, Rovai (2002b) defined classroom community as

> *a feeling that members have of belonging, a feeling that members matter to one another and to the group, that they have duties and obligations to each other and to the school, and that they possess shared expectations that members' educational needs will be met through their commitment to shared learning goals. One can, therefore, constitutively define classroom community as consisting of two components: feelings of connectedness among community members and commonality of learning expectations and goals. (p. 322)*

Many scholars discuss the relevance of building sense of community in online educational environments to improving students' overall satisfaction with the learning experience (Garrison, 2007, 2011; Moore, 2014; Palloff & Pratt, 2007a, 2007b; Shackelford & Maxwell, 2012; Stepich & Ertmer, 2003). There is evidence that SOC is positively related to other variables such as perceived learning (Liu, Magjuka, Bonk & Lee, 2007; Rovai, 2002b; Shea, 2006; Shea, Li, & Pickett, 2006; Top, 2012), satisfaction (Drouin, 2008; Tsai et al., 2008; Ouzts, 2006), engagement (Young & Bruce, 2011), and achievement (Harvey, Moller, Huett, Godshalk & Downs, 2007; Wighting, Nisvet & Spaulding, 2009). For example, Wighting, Nisvet and Spaulding (2009) found a relationship between the community learning subscale and academic achievement, and between SOC and academic achievement. Specifically in online courses in instructional design, Ertmer and Stepich (2005) found a significant relationship between perceived learning and the learning community subscale, but not between SOC and learning. Thus, as Wighting, Nisvet and Spaulding (2009) concluded, "learning has important social and cognitive dimensions and occurs most effectively when the school provides a positive social environment with a strong sense of community" (p. 64).

PROMOTING SENSE OF COMMUNITY

There have been several attempts to identify general recommendations to promote SOC. Palloff and Pratt (2007a) suggested active interaction, collaborative learning, socially constructed meaning, resource sharing, and expressions of support and encouragement. Bielaczyc and Collins (1999) identified three similar strategies that activities should have in order to promote learning communities in the classroom: providing individual development and collaborative construction of knowledge, sharing knowledge and skills among members of the community, and making learning processes visible. Haythornthwaite, Kazmer, Robins, and Shoemaker (2000) also suggested three instructional strategies to promote SOC in distance education: promoting initial bonding, monitoring and supporting interaction and participation, and providing multiple ways of communication.

SOC may rise when students have opportunities to interact with their classmates and instructor (Cameron et al., 2009; Dawson, 2006; Drouin, 2008; Ouzts, 2006; Shen et al., 2008; Swan, 2002). Focusing on the types of learner-learner interactions, Shackelford and Maxwell (2012) found that the following activities, in order of relevance, have an impact on developing students' SOC in online learning: introductions, collaborative group projects, contributing personal experiences, entire class online discussions, and exchanging resources. Applying guidelines proposed by Palloff and Pratt (1999) to their own online courses on instructional design, Stepich and Ertmer (2003) proposed the following: Instructors should promote

community-building from the very beginning of the course, monitor and support participation throughout the semester, focus instructor participation on providing "weaving" comments, measure perceptions of "community" within the class, and create a technology "boot camp" to ensure that everyone can use the technology easily. In summary, Snyder (2009) stated, "As online learning matures, it is important for both theorists and practitioners to understand how to apply new and emerging educational practices and technologies that foster a sense of community and optimize the online learning environment" (p. 48).

The purpose of this study is to extend the results of previous research analyzing relationships between sense of community, perceived learning, and academic achievement in an online graduate course in instructional design. Using different activities recommended in the literature to promote SOC, this study explores students' increase in instructional design skills during an eight-week online course, examining how SOC is related to two measures of achievement and students' perceptions of community. This study addresses the following research questions:

> ➢ Is there a relationship among sense of community, perceived learning and achievement in an online graduate course?
> ➢ What do students value the most in an online graduate course that promotes learning and sense of community?

METHODS AND PROCEDURES

Participants were graduate students enrolled in an online course in instructional design during the 2014 summer session. The course is a required graduate course for obtaining a master's degree in educational technology. The first author, the instructor of the course, sent invitations to participate in the research study to the 21 students enrolled in this eight-week section. Fifteen students (10 female; 5 male) agreed to participate. Based on their self-introductions at the beginning of the course, students had a broad range of backgrounds, knowledge, and teaching experiences. 6 of them were secondary teachers, 3 students worked as elementary teachers, 5 were educational technology coordinators, and 1 student was a college professor. Assignment submissions, discussion forums, and grading took place in Moodle, the program's learning management system.

Different collaborative activities were designed to promote SOC and foster learning among students. First, a VoiceThread presentation was created at the beginning of the course to allow students to introduce themselves using video. VoiceThread is a web-based tool that provides a multi-modal asynchronous communication among users including text, voice, and audio. Documentation of the tool's implementation in a graduate course has been provided elsewhere (Ching & Hsu, 2013). Students were also required to post comments, interacting with at least three classmates who shared something in common with them. As discussed by Rovai (2007), this initial forum was developed with the intention of promoting community building and social presence among students.

Second, four asynchronous text-based discussions were scheduled to support interaction, participation and collaborative construction of meaning. There were two types of activities during discussions. At the beginning of the course, four groups were created to help the instructor lead the asynchronous discussion forums. These leading groups were in charge of preparing a VoiceThread presentation to summarize and discuss assigned content. Presentations were posted in Moodle on Mondays for the whole class to view. Then, during the discussion week, two questions were posted in the forum. Those students who were not in the leading groups were required to answer both questions by Thursday and write follow-up posts by Sunday in response to their classmates' questions or comments.

Third, an instructional design (ID) project was created to help students apply ID concepts to real-world situations. This project was divided into two sections due at different points in the semester. The first section required students to conduct a needs analysis. In their second report, students revised their analysis, developed their projects, and conducted an evaluation. To provide another venue for learning and supporting each other, a peer review activity was created. For this activity, students were assigned one classmate's first report and asked to provide feedback using a form (See appendix A). A course evaluation survey asking about the most valuable aspect(s) of the overall learning experience served as a secondary data source, and results were used to support findings.

Data Collection and Analysis

Quantitative data were collected using two surveys (perceived SOC and perceived learning) and by analyzing scores for the final ID projects and discussion participation. This was supplemented with qualitative data collected from responses to one item in the course evaluation survey. Although there are several instruments to measure SOC in education, most of them were developed for K-12 environments (Rovai, Wighting, & Lucking, 2004). Thus, for this study SOC was measured using the Classroom Community Scale survey, which focuses on postsecondary students. This survey has 20 Likert-scale questions composed of two subscales of connectedness and learning. Rovai (2002b) explains,

Connectedness represents the feelings of students regarding their cohesion, spirit, trust, and interdependence. Learning represents the feelings of students regarding the quality of their construction of understanding and the degree to which they share values and beliefs concerning the extent to which their learning goals and expectations are being satisfied. (p. 325)

The instrument has questions such as: *"I feel that students in this course care about each other," "I feel reluctant to speak openly,"* and *"I feel uncertain about others in this course."* Face validity and construct validity have been established (Rovai, 2002a; Rovai & Baker, 2005).

To measure perceived learning, students completed a self-assessment questionnaire at the beginning and end of the online course in which they rated themselves on 19 instructional design competencies. These competences were composed by the International Board of Standards for Training, Performance and Instruction (IBSTPI, 2014), providing content validity to this instrument (Leedy & Ormrod, 2013). Students were asked to read each competency carefully and choose the option that indicated how they perceived their level of competency from 1 (Weak), 2 (Somewhat weak), 3 (Neither weak or strong), 4 (Somewhat strong), and 5 (Strong). A gain score was calculated to determine changes in the perceived learning of students' ID competency. This questionnaire measured items such as the ability to "conduct a needs assessment in order to recommend appropriate design solutions and strategies," "use an instructional design and development process appropriate for a given project," and "evaluate instructional and non-instructional interventions." It is important to emphasize that most of these instructional designer competences guide the requirements of the instructional design project required of the students.

Finally, achievement was measured using two different grades. The first was obtained from students' work on midterm and final project reports. This instructional design project assessed students' capability in applying instructional design concepts to an instructional design problem, creating different analyses, developing materials, and working with a subject matter expert to evaluate their projects. The second score was taken from an average of the three grades that students received through their participation in three asynchronous discussions. Discussions assessed students' active participation in the course, measuring students'

understanding of the reading materials related to instructional design. Final grades were assigned based on three rubrics created for these activities (See Appendices B, C and D).

RESULTS AND DISCUSSION

Because of the small sample size, a Shapiro-Wilk test was used to assess the normality of the data (Sen & Srivastava, 1990). Results show the SOC ($W=.99$, $p=.99$), SOC_Learning ($W=.95$, $p=.59$), and perceived learning ($W=.95$, $p=.53$) are approximately normally distributed; but SOC connectedness ($W=.82$, $p=.006$), ID project ($W=0.72$, $p=.001$), and discussions ($W=.67$, $p=.001$) are not.

Perceived Learning

The Cronbach's alpha coefficients for the pretest and posttest were 0.92 and 0.95 respectively, indicating an acceptable level of reliability (Nunnally & Bernstein, 1994). Results from the self-assessment questionnaire showed a significant increase ($t=4.36$, $p=.001$) in students' perceptions of their instructional design skills from pre- to post-test scores. On average, students' ratings changed .86 points from 2.94 (neither weak nor strong) to 3.80 (somewhat strong). This result shows that the different activities designed in this course helped students to perceive that they gained knowledge based on instructional design competencies composed by the International Board of Standards for Training, Performance and Instruction (IBSTPI, 2014).

Sense of Community

The Cronbach's alpha coefficient from the data was .84, indicating an acceptable level of reliability (Nunnally & Bernstein, 1994). Scores of students (Table 1) on the Community Scale averaged 71/100 points suggesting that students "agreed" that they felt SOC in the classroom. Additionally, students also agreed that they felt connected to each other ($x=37.00$), and the class as a community enabled them to reach their learning goals ($x=34.27$).

Table: 1
Descriptive statistic of the SOC survey

Items	Mean*	Standard Deviation
Classroom community	71.27	8.15
Connectedness subscale	37.00	5.50
Learning subscale	34.27	4.40

Total possible classroom community scores range from 0 to 100, with higher scores reflecting a stronger sense of community. Connectedness and learning subscale scores can each range from 0 to 50.

Achievement

Distribution of the grades for discussions and the final project are shown in Table 2. Because both variables are measured in ratio scale but are not normally distributed, a Spearman correlation coefficient was used to address the relationship between the two achievement scores (Vaughan, 2001). The Spearman correlation showed a significant relationship between discussions grades and instructional design project grades (r_s=.52; p<.05). These results suggest that although they are two different types of assessments, they both are valid strategies to measure achievement in novice instructional design students.

Table: 2
Grades frequencies

Scores	Discussion grades	ID Project grades
0-79	1 (6.7%)	2 (13.3%)
80-89	1 (6.7%)	3 (20%)
90-100	13 (86.6)	10 (66.7%)

Relationships among variables

Because the data from the SOC connectedness scale, ID project, and discussions variables did not show a normal distribution in the Shapiro-Wilk's test, a Spearman rank-order correlation coefficient was used to address the relationship among the variables (Table 3). Results showed that for an alpha level of .05, the correlation between perceived learning and SOC in the connectedness subscale for the 15 students was statistically significant (r_s=.62; p<.05). Thus, increases in students' perceived learning were correlated with increases in students' feelings of connectedness. This result, a difference from what was found by Ertmer and Stepich (2005), suggests that students with higher gains in perceived learning found it more relevant to feel connected with the group than to learn from the group. Additionally, a correlation between perceived gain and the instructional design project measure of achievement was also statistically significant (r_s=.53; p<.05). This result was expected, since the requirements of the instructional design project were guided by the instructional designer competences. Finally, although sense of community is closely associated with interactions (Dawson, 2006; Shen et al., 2008), the results did not show a significant relationship between the sense of community and the discussions achievement variable.

Table: 3
Correlations among variables

	Perceived learning	Discussions	ID Project
SOC	.45	.18	.17
SOC-Connectedness	.62*	.32	.38
SOC-Learning	.24	-.30	.10

Significant at the .05 level

In the course evaluation survey, students were asked the following question: *Which aspects of this course were most valuable to your overall learning experience?* Using deductive coding to focus on the "key variables that the researcher brings to the study" (Miles, Huberman & Saldaña, 2014, p. 81), students' responses were analyzed based on perceived learning, achievement (ID project and discussions) and sense of community to observe the relationships between them (Table 4). Additionally, the criteria of selection for these categories were extended to "latent content" (Berg, 2008) where participants' responses are interpreted. In this way, the frequency of each category observing both the manifest and the latent content is reported. Within a message, if a participant wrote two sentences with the same meaning, it was counted as one. In addition, some responses could be classified in different categories, so each appearance was counted as one for each category. A complete student's response was used as the unit of coding.

Table: 4
Deductive coding of the course most valuable aspects

Variables (n=17)	Sample Responses	Percentage of students mentioning this aspect
Perceived knowledge	I have a working knowledge of what ID is.	6 (30%)
Achievement-Discussions	Discussion questions related to ID process.	5 (25%)
Achievement-ID Project	The Instructional Design Project	4 (20%)
Sense of Community	Dr. T was always willing to reach out to support me. He was very flexible and took personal situations into consideration.	4 (20%)
Others	None	1 (5%)

Overall, ninety-five percent of student's responses were classified in any of the categories. After analyzing the responses, the most frequently mentioned aspect (30%) is perceived learning. Students highlighted the learning they obtained as the most important aspect of the course. Looking at the relationship among the variables, one student commented that "The discussion groups were very valuable in processing the course material." Similarly, another student stated that the most valuable experience in the course was "The leading group Voicethread group discussion. This allowed students to work together, help each other, and feel a sense of accomplishment." As such, participants especially appreciated interacting with peers to work on the different learning activities. Thus, results from the SOC survey and students' comments support the use of collaborative activities such as leading groups and discussions to help students to build SOC in the group.

CONCLUSIONS AND IMPLICATIONS

The use of different activities to promote SOC (Haythornthwaite, et al., 2000; Palloff and Pratt, 2007a; Rovai, 2007) is well documented. In this study, collaborative activities were designed to promote SOC among students. First, an introductory activity was created where students introduced themselves and interacted with their classmates. Second, leading groups were created to develop a presentation summarizing specific content from the course and to help lead a one-week discussion. Third, four whole-class discussion forums were developed to discuss relevant ID concepts. Finally, students participated in a peer-review activity providing feedback on one classmate's instructional design project.

The results of this study suggest that different activities designed for this online instructional design graduate course are associated with students' perceived learning and a positive sense of community. Students' comments from the course evaluation about the aspects of this course which were most valuable to their overall learning experience helped us to confirm that the activities were beneficial for them. Besides significant correlations between perceived learning and sense of connectedness, and between perceived learning and grades from the final project, results did not show significant correlations between the two achievement measures and SOC. In a similar study conducted on students enrolled in instructional design courses, Ertmer and Stepich (2005) used bulletin board postings and students' case analysis as activities to measure students' achievement. Their results also suggested a lack of any significant relationship between these activities and SOC. We echo their conclusion that additional research should be conducted using other type of activities to measure learning and/or achievement.

Because of the rather limited sample size and specific learning contexts and tasks, findings in this study should be interpreted with caution. Since individual characteristics appear to relate to differences in perceived SOC (Drouin & Vartanian, 2010), future research should replicate these type of questions in online courses with different learners, such as undergraduates from different fields, in order to corroborate or contradict findings related to SOC. Future research could also incorporate interviews with some of the participants to provide insights into how they value each one of the activities designed in this course. Configuration of the different activities could be modified as well. For example, discussion forums were one-week long and students received full credit when they wrote at least four posts. Longer periods of time and an undetermined amount of postings required may increase the quantity and the quality of postings (Gilbert & Dabbagh, 2005). Additionally, although VoiceThread is an excellent tool to motivate interactions and social presence, this Web 2.0 tool needs to be improved to allow extended threaded conversations (Borup, West & Graham, 2012).

The results have implications for instructors who teach online, especially for those looking for activities regarding how to promote SOC. As part of the goal of increasing teaching presence (Shea, Li, Pickett, 2006; Shea, Li, Swan & Pickett, 2005), instructors have the responsibility to design and organize e-learning environments to facilitate collaborative communities of inquiry (Richardson, et al., 2012). Different types of activities, like the ones proposed in this study, provide examples that may help instructors to elicit sense of community and learning among students in their own online courses. Furthermore, instructors in the instructional design field may also be interested in how activities such as instructional design projects, peer-review activities, and asynchronous discussions may help students to improve achievement and their perceived learning.

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Appendix A: Peer Feedback Form

Report #1 Formative Assessment:
Please, read carefully your classmate's ID project and provide detailed and thoughtful feedback on each one of the sections to help your classmate to improve his/her ID project. Make sure your comments describe the strengths of the project and details where the project can be improved based on our readings (Larson & Lockee's textbook) and the information on the ID Project Outline document.

Part 1. Topic
  - ➤ **Goal statement:**
    The goal is expressed in clear, unambiguous terms; it is succinct and not too broad. Comments:
  - ➤ **Audience description:**
    The audience (learners) is clearly described. Comments:

Part 2. Analysis Report
  - ➤ **Gather data on needs, resources, and constraints:**
  - ➤ **Needs assessment survey and other documentation: Includes both a description of the survey questionnaire and the actual questions. Describe here any other documentation you used to verify the needs. Comments:**
  - ➤ **Needs assessment data: Describes the learners' needs with a rich level of detail based on results of the analysis survey. Comments:**
  - ➤ **Learner needs and characteristics**
    Describes the characteristics of the learners with a rich level of detail. Comments:
  - ➤ **Learning context description**
    Describes the features of the learning context with a rich level of detail. Comments:
  - ➤ **Context analysis**
    Describes the features of the transfer context with a rich level of detail. Comments:
  - ➤ **Content analysis (Flow diagram)**
    Highly detailed, organized chart that shows very finite description of breakdown of tasks related to the learning goal and objectives. Comments:

Overall Review
Make any additional comments about the first report and provide specific suggestions and recommendations to improve the quality and clarity of this instructional design project. Comments:

Appendix B: Midterm Report Rubric

Items	Exceed expectation	Meet expectation	Below expectation
Goal statement (10%)	The goal is expressed in very clear and unambiguous terms; it is succinct and describes a realistic and focused project.	The goal is expressed in clear and unambiguous terms; it is succinct and describes a realistic and focused project.	The goal is unclear and the project is too broad in scope.
Audience description (10%)	The audience (learners) is clearly described; it contains two or three sentences.	The audience (learners) is clearly described; it contains two or three sentences.	The audience (learners) is unclearly described.
Needs assessment survey (15%)	Includes both a very clear description of the survey questionnaire and the actual questions. Survey has at least 15-20 questions, and the questions are thoughtfully designed to meet the needs of the project. Includes a description of how the survey was conducted and how many learners received/filled out surveys.	Includes both a description of the survey questionnaire and the actual 15-20 questions. Survey has at least 15-20 questions, and the questions meet the needs of the project. Includes a description of how the survey was conducted and how many learners received/filled out surveys.	Description of the survey is unclear, survey has less than 15 question, and/or actual survey questions were not provided. If provided, the survey questions do not seem relevant to the project. No information about how the survey was conducted.
Needs assessment data (15%)	Describes the learners' needs in a narrative format with a rich level of detail based on results of the analysis survey. It includes at least one relevant graph.	Describes the learners' needs in a narrative format with a good level of detail based on results of the analysis survey. It includes at least one relevant graph.	Cursory analysis of the learners' needs and it is not presented in a narrative format. No graphs were included.
Learner needs and characteristics (15%)	Describes learners' characteristics with a rich level of detail. Description includes learner demographics and prior skills. It includes at least one relevant graph.	Describes learners' characteristics with a good level of detail. Description includes learner demographics and prior skills. It includes at least one relevant graph.	Cursory description of learners' characteristics. No graphs were included.
Learning context (15%)	Describes the features of the learning context with a rich level of detail. Examines the context from a critical perspective.	Describes the features of the learning context with a good level of detail. Examines the context from a critical perspective.	Cursory description of the learning context.

Performance context (10%)	Describes the features of the transfer context with a rich level of detail, addressing how students will use what they have learned outside the classroom	Describes the features of the transfer context with a good level of detail, addressing how students will use what they have learned outside the classroom	Cursory description of the performance context.
Content analysis-Flow diagram (10%)	Highly detailed and organized chart that shows a very finite description of breakdown of tasks related to the learning goal and objectives	Detailed and organized chart that shows a finite description of breakdown of tasks related to the learning goal and objectives	Unclear chart with missing detailed steps that makes it difficult to understand.

Appendix C: Final Report Rubric

Items	Exceed expectation	Meet expectation	Below expectation
Updated report #1 (10%)	All suggested changes in the feedback have been very well addressed and all changes improve the overall quality of the instructional design document	All suggested changes in the feedback have been addressed and changes improve the overall quality of the instructional design document	Some of the suggested changes in the feedback have been addressed
Rationale (10%)	A very well written, detailed explanation of the need for the project. It identifies needs, describes overall scaffolding strategy and pedagogical approach. Each one of these descriptions explains why it can be classified as such, and contains good detail and adherence to text without being wordy.	A well-written explanation of the need for the project. It identifies needs, describes overall scaffolding strategy and pedagogical approach. Each one of these descriptions explains why it can be classified as such.	Limited information about the need the project meets. It does not describing clearly overall scaffolding strategy, pedagogical approach, and why it can be classified as such. It contains mechanical errors.
Learning objectives (5%)	A comprehensive set of objectives and sub-objectives that are numbered and very detailed about the instructional outcomes. Objectives are well written in a clear, unambiguous manner including conditions, behavior, and criteria.	A comprehensive set of objectives and sub-objectives that are numbered and detailed about the instructional outcomes. Objectives are written in a clear, unambiguous manner.	List of objectives is very short or very long, lacking in detail, and does not include sub-objectives.
Matrix of objectives, Bloom's taxonomy, and assessments (5%)	Table is clearly filled out with proper identification of taxonomy level, scaffolding strategy, and assessment types.	Table is filled out with proper identification of taxonomy level, scaffolding strategy, and assessment types.	Table provided is not filled out with proper identification of taxonomy level, scaffolding strategy, and assessment types.
ARCS table (5%)	Chart clearly identifies the motivational strategies to be used for each of the four areas with a rich level of detail.	Chart identifies the motivational strategies to be used for each of the four areas.	Chart does not identify clearly the motivational strategies to be used for each of the four areas.

Instructor guide (10%)	It is very detailed and makes flow of instruction very clear following the Instructor Guide Outline. If a flowchart is provided, it is very clear and makes good use of color, and logical flow.	It is very detailed and makes flow of instruction clear following the Instructor Guide Outline. If a flowchart is provided, it is clear and makes good use of color, and logical flow.	It does not contain enough details and makes flow of instruction unclear. If a flowchart is provided, it is not very clear.
Learner Content: Learning materials (10%)	Materials are very well developed (if not in final state, close to it), amount of material is sufficient to support stated goals/objectives, and materials are professional in appearance. Outside resources are cited correctly in a reference page.	Materials are well developed (if not in final state, close to it), amount of material is sufficient to support stated goals/objectives, and materials are professional in appearance. Outside resources are cited correctly.	Materials are not well developed, amount of material is not sufficient to support goals/objectives, and materials are not professional in appearance. Outside resources aren't cited correctly.
Learner Content: Formative and/or Summative Assessment (10%)	Formative and/or summative assessments "fit" the type of learning identified and instructional strategies proposed. If adapted, they are well documented.	Formative and/or summative assessments "fit" the type of learning identified and instructional strategies proposed. If adapted, they are well documented.	Formative and/or summative assessments do not "fit" the type of learning identified and instructional strategies proposed. Materials are not documented.
Evaluation plan (10%)	A comprehensive plan to evaluate the instructional design project using Kirkpatrick's model is clearly described. Each one of the four levels includes key questions you would want answered at each level, who would be involved, possible measurement instruments, and any additional information that helps to describe your evaluation plans.	A plan to evaluate the instructional design project using Kirkpatrick's model is described. Each one of the four levels includes key questions you would want answered at each level, who would be involved, possible measurement instruments, and any additional information that helps to describe your evaluation plans.	A plan to evaluate the instructional design project using Kirkpatrick's model is not clearly described. Not all four levels include key questions that would be answered at each level, who would be involved, and possible measurement instruments.
Subject Matter Expert (SME) (5%)	Clearly indicates who has served as the SME identifying with rich level of detail his/her expertise in the project content	Clearly indicates who has served as the SME identifying his/her expertise in the project content	SME is described but not named and/or it is not clear his/her expertise in the project content.

Evaluation survey/rubric (5%)	A SME evaluation rubric or survey is included to properly evaluate the materials created. Questions are well-designed to obtain a thorough evaluation. If it is a survey, yes/no questions are avoided to obtain more detailed responses.	A SME evaluation rubric or survey is included to properly evaluate the materials created. Questions are well-designed to obtain a thorough evaluation. If it is a survey, yes/no questions are avoided to obtain more detailed responses.	A SME evaluation rubric or survey is included but it doesn't evaluate properly the materials created. If it is a survey, yes/no questions were included.
Expert review report (5%)	Clear and detailed presentation of SME's evaluation of the materials that summarizes the most important points. It is written in narrative form and does not exceed one page.	Clear presentation of SME's evaluation of the materials that summarizes the most important points. It is written in narrative form and does not exceed one page.	Report is vague and/or short, and does not include a clear presentation in a narrative form of the SME's evaluation.
Comments on suggestions (10%)	Carefully dissects any feedback/constructive criticism from SME and addresses in detail how the concerns would be addressed in future iterations of the instructional materials; does not exceed one page.	Carefully dissects any feedback/constructive criticism from SME and addresses how the concerns would be addressed in future iterations of the instructional materials; does not exceed one page.	Cursory analysis on how the concerns would be addressed in future iterations of the instructional materials.

Appendix D: Asynchronous Discussion Rubric

Items	Exceed expectation (2)	Meet Expectation (1)	Below Expectation (0)
Quality of initial posts (20%)	The initial posts are well-written and answers the discussion question(s) thoughtfully addressing all aspect of the question.	The initial posts are well-written and answers the discussion question(s) but lacks to fully address all aspects of the questions.	No initial posts are made or the initial posts contains superficial thought and preparation and does not address all aspects of the questions.
Quality of follow-up posts (20%)	Follow-up posts answer completely classmates' question(s) to your initial posts and offer useful suggestions and new perspectives on classmates' initial posts for further development of the discussion.	Follow-up posts answer classmates' question(s) and some of the comments offer useful suggestions and new perspectives for further development of the work.	Most of the follow-up comments are shallow contributions to the discussion (e.g., great job!) or not helpful for further development of the work.
Content contribution (20%)	Posts a factually correct, reflective, and substantive contribution that advances discussion.	Posts information that is factually correct but lacks full development of concept or thought.	Posts information off is off the topic or irrelevant and does not add substantive information to the discussion.
References and support (20%)	Posts contain references to the literature, readings, or personal experience to support students' answers.	Posts incorporate some references from literature and personal experience.	Includes no references or supporting experience.
Clarity and mechanics (20%)	Contributes to discussion with clear, concise comments formatted in an easy-to-read style free of grammatical or spelling errors.	Contributes valuable information to the discussion with minor clarity or mechanics errors.	Post unorganized or rude content that contains multiple errors.